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Your Name Vijay Shankar

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AU 2629 Examiner # 70782

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Serial # 10/747819

Priority Date \_\_\_\_\_

DESCRIBE the scope of your request, such as the area of art, novelty, process or method if applicable. Specify the concepts, synonyms, keywords, acronyms, or definitions and the relationship of the concepts to each other. Please attach a copy of the background, abstract, and pertinent claims of the application: **ONLY specifying CLAIM 1 is not enough.**

US 6,335,718

STIC Searcher Kimberly Johnson

Phone 2-4235

Date picked up 6/4/07

Date completed 6/4/07

DATABASES Searched Comlink/Questel/Lexis TEXT

LITIGATION X

OTHER 30



**Johnson, Kimberly (STIC)**

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**From:** Shankar, Vijay  
**Sent:** Monday, June 04, 2007 9:01 AM  
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**Subject:** PLEASE DO Litigation Search for theses cases ASAP

**Importance:** High  
**Sensitivity:** Confidential

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1) 10/747,819 - US 6335718

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VIJAY SHANKAR

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**FAN** - 20063140231610  
**PN** - GB9910383 D0 19990707 [GB9910383]  
      GB2345423 A 20000705 [GB2345423]  
     KR20000046659 A 20000725 [KR20000046659]  
      JP2000207077 A 20000728 [JP2000207077]  
     GB2345423 B 20010829 [GB2345423]  
      US6335718 B1 20020101 [US6335718]  
**TI** - Data transmission apparatus and method  
**PA** - LG LCD INC  
     LG PHILIPS LCD CO LTD  
**PA0** - LG. Philips LCD Company, Ltd., Seoul [KR]  
**IN** - HONG JIN CHEOL; SONG HONG SUNG  
**AP** - 1998KR-0063372 19981231; 1999US-0299533 19990426; 1999GB-0010383  
     19990505; 1999JP-0169026 19990615  
**PR** - 1998KR-0063372 19981231  
**IC** - G06F-003/00  
     G06F-003/14  
     G06F-013/38  
     G09G-003/20  
     G09G-003/36  
     H04L-025/08  
     H04L-025/49  
**ICAA** - G06F-003/00 [2006-01 A F I R M JP]; G06F-003/14 [2006-01 A - I R M EP];  
     G06F-013/38 [2006-01 A L I R M JP]; G09G-003/20 [2006-01 A L I R M JP];  
     G09G-003/36 [2006-01 A L I R M JP]; H04L-025/08 [2006-01 A - I R M EP];  
     H04L-025/49 [2006-01 A - I R M EP]  
**ICCA** - G06F-003/00 [2006 C F I R M JP]; G06F-003/14 [2006 C - I R M EP]; G06F-  
     013/38 [2006 C L I R M JP]; G09G-003/20 [2006 C L I R M JP]; G09G-003/36  
     [2006 C L I R M JP]; H04L-025/08 [2006 C - I R M EP]; H04L-025/49 [2006 C  
     - I R M EP]  
**PCL** - ORIGINAL (O) : 345098000; CROSS-REFERENCE (X) : 345087000  
     345100000 345600000 345605000  
**FI** - G06F3/00 X; G06F13/38 320A; G09G3/36; G09G3/20 633D  
**FTM** - 5B077 AA45; 5B077 FF11; 5C006 AA01; 5C006 AA22; 5C006 AF61; 5C006  
     BB11; 5C006 BF06; 5C006 BF14; 5C006 BF16; 5C006 BF22; 5C006 BF26;  
     5C006 BF27; 5C006 FA32; 5C006 FA47; 5C080 AA10; 5C080 BB05; 5C080  
     DD12; 5C080 DD26; 5C080 FF09; 5C080 JJ02; 5C080 JJ03; 5C080 JJ04  
**CT** - (US6335718)  
     US5748902; US5917364; EP0069183; EP0228528; JP9-233146; JP10-190751;  
     WO9209162; WO9713347; WO9713348  
     Brochure from Crystal, A Cirrus Logic Company, Flat Panel Electronics--EMI  
     Reduction Features DTR Block Diagram.  
**CT** - (GB9910383)  
     Cited in the search report

- EP69183(A1);EP228528(A1);JP90233146(A);JP100190751(A);US5748902(A);US5917364(A);WO9209162(A1);WO9713347(A2);WO9713348(A2)
- CT** - (JP2000207077)  
[19] Citation as reason for refusal of an application  
JP (A) 1996304763 [JP08304763]  
JP (A) 1998190751 [JP10190751]
- AB** - (US6335718)  
A data transmission apparatus a data transmitter selectively inverting data and transmitting the selectively inverted data. A data receiver selectively re-inverts the selectively inverted data from the data transmitter and reconstructs the inverted data into the original data. The inversion operation of the data transmitter and the data receiver is controlled by a mode controller. The mode controller receives data having a number of bits along with a clock signal to detect a number of transitions every period of the clock signal, and controls driving modes of the data transmitter and the data receiver in accordance with the detected number of transitions.
- OBJ** - (US6335718)  
This invention relates to a data transmission apparatus and method for transmitting parallel data and, more particularly, to a liquid crystal display device employing the data transmission apparatus.  
Accordingly, the present invention is directed to a data transmission system that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.  
An object of the present invention is to provide a data transmission apparatus and method that are suitable for minimizing EMI and optimizing power consumption.  
Another object of the present invention is to provide a liquid crystal display device that minimizes EMI and optimizes power consumption.  
A further object of the present invention is to provide a computer system that minimizes EMI and optimizes power consumption.  
In another aspect of the present invention, a data transmission includes the steps of receiving a data having a plurality of bits along with a synchronous clock to detect a transition amount of the data every period of the synchronous clock and generating a mode control signal having a logical value changing in accordance with the detected transition amount; responding to the mode control signal to selectively invert the data and transmitting the inverted data; and responding to the mode control signal to selectively invert the selectively inverted data and to reconstruct the inverted data into the original data.  
In another aspect of the present invention, a liquid crystal display device includes a mode controller for receiving video data having a plurality of bits to detect a transition amount between nth video data and (n-1)th video data and for generating a mode control signal having a logical value changing in accordance with the detected transition amount, said n being an integer; a data transmitter, responsive to the mode control signal, for selectively inverting the nth video data and transmitting the inverted video data; and a data receiver, responsive to the mode control signal, for selectively inverting the selectively inverted video data from the data transmitter to reconstruct the inverted video data into the original video data.  
In another aspect of the present invention, a computer system includes a mode controller for receiving video data having a plurality of bits from a video card to

detect a transition amount between  $n$ th video data and  $(n-1)$ th video data and for generating a mode control signal having a logical value changing in accordance with the detected transition amount, said  $n$  being an integer; a data transmitter, responsive to the mode control signal, for selectively inverting the  $n$ th video data and transmitting the inverted video data; and a data receiver, responsive to the mode control signal, for selectively inverting the selectively inverted video data inputted, via a transmission line, from the data transmitter and for reconstructing the inverted video data into the original video data.

In a further aspect of the present invention, a computer includes a mode controller for receiving video data having a plurality of bits from a video card to detect a transition amount between  $n$ th video data and  $(n-1)$ th video data and for generating a mode control signal having a logical value changing in accordance with the detected transition amount, said  $n$  being an integer; a data transmitter, responsive to the mode control signal, for selectively inverting the  $n$ th video data and transmitting the inverted video data; and a data receiver, responsive to the mode control signal, for selectively inverting the selectively inverted video data inputted, via a transmission line, from the data transmitter and for reconstructing the inverted video data into the original video data and outputting the reconstructed video data to a data driver.

**ADB - (US6335718)**

The objectives and other advantages of the invention will be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described, a data transmission apparatus according to an embodiment of the present invention includes a mode controller for receiving a data having a plurality of bits along with a synchronous clock to detect a transition amount of the data every period of the synchronous clock and for generating a mode control signal having a logical value changing in accordance with the detected transition amount; a data transmitter, responsive to the mode control signal, for selectively inverting the data and transmitting the inverted data; and a data receiver, responsive to the mode control signal, for selectively inverting the selectively inverted data from the data transmitter to reconstruct the inverted data into the original data.

Such a data transition causes an increase in power consumption at each output stage.

**ICLM - (US6335718)**

1. A data transmission system comprising:

a mode controller receiving first data having a plurality of bits and outputting a first control signal in accordance with a number of data transitions of the plurality of bits of the data;

a data transmitter coupled to the mode controller and outputting second data corresponding to the first data in response to the first control signal from the mode controller; and

a data receiver coupled to the data transmitter and outputting third data corresponding to the second data in response to a second control signal corresponding to the first control signal.

16. A data transmission system for a computer comprising:

a main control unit including:

- a video card outputting first data;

- a mode controller receiving first data having a plurality of bits and outputting a first control signal in accordance with a number of data transitions of the plurality of bits of the data; and
- a data transmitter coupled to the mode controller and outputting second data corresponding to the first data in response to the first control signal from the mode controller; and
- a display unit coupled to the main control unit including:
  - a data receiver coupled to the data transmitter and outputting third data corresponding to the second data in response to a second control signal corresponding to the first control signal; and
  - data driver coupled to the data receiver and receiving the third data.

19. A liquid crystal display device having a data transmission system comprising:

- a mode controller receiving first data having a plurality of bits and outputting a first control signal in accordance with a number of data transitions of the plurality of bits of the data;
- a data transmitter coupled to the mode controller and outputting second data corresponding to the first data in response to the first control signal from the mode controller; and
- a data receiver coupled to the data transmitter and outputting third data corresponding to the second data in response to a second control signal corresponding to the first control signal.

34. A computer comprising:

a main control unit including:

- a video card outputting first data;
- a mode controller receiving first data having a plurality of bits and outputting a first control signal in accordance with a number of data transitions of the plurality of bits of the data; and
- a data transmitter coupled to the mode controller and outputting second data corresponding to the first data in response to the first control signal from the mode controller; and
- a display unit coupled to the main control unit including:
  - a data receiver coupled to the data transmitter and outputting third data corresponding to the second data in response to a second control signal corresponding to the first control signal; and
  - data driver coupled to the data receiver and receiving the third data.

37. A method of transmitting data comprising the steps of:

- receiving first data having a plurality of bits and
- outputting a first control signal in accordance with a number of data transitions of the plurality of bits of the data;
- outputting second data corresponding to the first data in response to the first control signal; and
- outputting third data corresponding to the second data in response to a second control signal corresponding to the first control signal.

38. A data transmission apparatus, comprising:

- a mode controller for receiving a first data having a plurality of bits and a clock signal to detect a number of transitions of the first data corresponding to the clock signal and for generating a mode control signal having a logic value changing in accordance with the number of transitions;
- a data transmitter, responsive to the mode control signal, for selectively inverting the first data and transmitting the inverted data; and

a data receiver, responsive to the mode control signal, for selectively inverting the selectively inverted data from the data transmitter to reconstruct the selectively inverted data into the first data.

39. A data transmission method comprising the steps of:

receiving a first data having a plurality of bits and a clock signal to detect a number of transitions in the first data corresponding to the clock signal and generating a mode control signal having a logic value changing in accordance with the number of transitions;

selectively inverting the first data in response to the mode control signal and transmitting the inverted data; and

selectively inverting the selectively inverted data in response to the mode control signal and reconstructing the inverted data into the first data.

40. A liquid crystal display device having a data driver for driving a liquid crystal panel, comprising:

a mode controller for receiving video data having a plurality of bits to detect a number of transitions between a first video data and a second video data and for generating a mode control signal having a logic value changing in accordance with the number of transitions;

a data transmitter, responsive to the mode control signal, for selectively inverting the second video data and transmitting the selectively inverted video data; and  
a data receiver, responsive to the mode control signal, for selectively inverting the selectively inverted video data from the data transmitter to reconstruct the inverted video data into the second video data.

41. A computer system including a liquid crystal display device and a video card for producing video data to be supplied to the liquid crystal display device, said system comprising:


a mode controller for receiving video data having a plurality of bits from the video card to detect a number of bit transitions between a first video data and a second video data and for generating a mode control signal having a logic value changing in accordance with the number of bit transitions;

a data transmitter, responsive to the mode control signal, for selectively inverting the second video data and transmitting the selectively inverted video data; and  
a data receiver, responsive to the mode control signal, for selectively inverting the selectively inverted video data inputted, via a transmission line, from the data transmitter and for reconstructing the inverted video data into the second video data.

UP - 2002-03

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1/2 LGST- ©EPO

PN -  US6335718 B1 20020101 [US6335718]

AP - US29953399 19990426 [1999US-0299533]



ACT - 20040330 US/RF-A  
REISSUE APPLICATION FILED  
EFFECTIVE DATE: 20031230

UP - 2004-15

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2/2 LGST- ©EPO

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 GB2345423 A 20000705 [GB2345423]  
 GB2345423 B 20010829 [GB2345423]  
**AP** - GB9910383 19990505 [1999GB-0010383]  
**ACT** - 19991124 GB/COOA-A  
CHANGE IN APPLICANT'S NAME OR OWNERSHIP OF THE  
APPLICATION  
**UP** - 2003-22

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1/1 CRXX- ©CLAIMS/RRX

**PN** -  6,335,718 A 20020101 [US6335718]  
**PA** - LG Philips LCD Co Ltd KR  
**ACT** - 20031230 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20040330  
REISSUE REQUEST NUMBER: 10/747819  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 2674

Reissue Patent Number:

Search statement 10



LEVEL 1 - 1 OF 1 PATENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

6335718

January 1, 2002

Data transmission apparatus and method

APPL-NO: 299533 (09)

FILED-DATE: April 26, 1999

GRANTED-DATE: January 1, 2002

CORE TERMS: video, bit, transition, control signal, transmitter, receiver,  
controller, selectively, interface, inverted ...

**LEXIS-NEXIS**  
**Library: PATENTS**  
**File: ALL**

6,335,718 OR 6335718

**LEXIS-NEXIS**

**Library: PATENTS**

**File: CASES**

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**LEXIS-NEXIS**  
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Patent Search 6335718 6/4/2007

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